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3 STATE OF VERMONT  
4 PUBLIC SERVICE BOARD  
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7 Petition by the Washington Electric )  
8 Cooperative, Inc., Pursuant to 30 V.S.A. )  
9 §248(j), for a Certificate of Public Good ) Docket No. \_\_\_\_\_  
10 Authorizing the Reconstruction of the )  
11 East Montpelier Substation )  
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15 PREFILED TESTIMONY OF  
16 DANIEL CROCKET, P.E.  
17

18 ON BEHALF OF  
19 WASHINGTON ELECTRIC COOPERATIVE, INC.  
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22 Mr. Crocket testifies to how the Washington Electric Cooperative will serve the load at East  
23 Montpelier Substation during its reconstruction. In addition, he provides testimony about how  
24 the substation reconstruction will not adversely affect system stability pursuant to 30 V.S.A.  
25 §248(b)(3).  
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**TESTIMONY**  
**OF**  
**DANIEL CROCKET, P.E.**

1    **Q1.    Please state your full name and address, and identify by whom you are employed.**

2    A.1.    My name is Daniel Crocket. My home address is 18 Woods End Drive, Essex Junction,  
3    Vermont. I am employed as an engineer with Crocket Engineering, LLC, Essex Junction,  
4    Vermont.

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6    **Q.2.    Please describe your educational background.**

7    A.2.    I received a Bachelor of Science in Electrical Engineering from Lafayette College in  
8    1981. I have been a registered Professional Engineer in the State of Vermont since 1990.

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10   **Q.3.    Please describe your professional background and the nature of your work for**  
11   **WEC.**

12   A.3.    I have 29 years of experience working for electric utilities as an engineer, including 20 in  
13   Vermont. During my career, I have been involved in the planning, design, construction and  
14   operation of electric power lines and substations from 230 kV down to 120/240 volts. I presently  
15   hold licenses from the states of Vermont, New Jersey and the Commonwealth of Pennsylvania.  
16   I have designed transmission lines and substations for a number of utilities and private

1 companies in Vermont, including Green Mountain Power, the Vermont Electric Cooperative, the  
2 Burlington Electric Department, Stowe Electric Department, Village of Morrisville Water and  
3 Light Department, AgriMark, and Washington Electric Cooperative (including its 48kV  
4 transmission line from the Coventry Generation Facility to Irasburg, Vermont). My experience  
5 also involves computer modeling to analyze the performance of transmission and distribution  
6 systems as well. See WEC Exhibit 21 (\_DC-1), a fair and accurate copy of my resume.

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8 **Q.4. What is the purpose of your testimony?**

9 A.4. To explain how the Washington Electric Cooperative will serve the load at East  
10 Montpelier Substation during the reconstruction. I will also provide pre-filed testimony about  
11 how the substation reconstruction will not adversely affect system stability pursuant to 30 V.S.A.  
12 §248(b)(3). Finally, I will discuss the size of the proposed transformers for the new substation.

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14 **Q.5. Please describe your role in the East Montpelier Substation project.**

15 A.5. I have been performing distribution circuit analysis and protective coordination studies  
16 for the Cooperative for the past eight years. In that role, I have completed both the Long Range  
17 Plan and 4 Year Work Plans for the Cooperative. Both the Long Range Plan and the 2008-2011  
18 Work Plan recognized the need to replace the structure at East Montpelier Substation. I was also  
19 asked to study the proposed temporary circuit configuration to assure that the members on these  
20 circuits receive adequate voltage while the substation is de-energized during construction.

1   **Q.6.   Please describe the proposed temporary circuit arrangement.**

2   A.6.   The load presently served by the East Montpelier Substation through three distribution  
3   feeders will be transferred to the Maple Corners and Jackson Corners Substations. The Maple  
4   Corners Substation is located at Maple Corners in the Town of Calais. There is a three phase tie  
5   between Maple Corners and the East Montpelier Substation along County Road and Templeton  
6   Road. By tying the circuits together at this point, Circuit #3 can be transferred to Maple Corners.  
7   A second tie along Snow Hill Road will allow Circuit #1 to be transferred to the Maple Corners.  
8   A temporary set of regulators at this tie point will support the voltage on Circuit #1.

9           The tie with Jackson Corners Substation is by way of the Orange Reservoir and Tower  
10   Road. By tying the circuits together at Route 302, Circuit #2 can be transferred to Jackson  
11   Corners. A set of regulators on Tucker Road will support the voltage to East Montpelier  
12   Substation.

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15   **Q.7.   How will the transmission supply to Maple Corner be maintained?**

16   A.7.   The Maple Corner Substation is presently supplied by a 34.5 kV line that originates at  
17   East Montpelier Substation. The protection for this circuit is a CXE 34.5 kV recloser located  
18   within the East Montpelier substation yard. In order to maintain this supply to Maple Corner,  
19   WEC proposes to relocate a section of this 34.5 kV line that is currently located over the top of  
20   the existing wooden structure to the eastern side of East Montpelier substation. A 34.5 kV Nova  
21   recloser will be installed in this section of line to provide protection for the line to Maple Corner.

1 This relocation and addition of the recloser will permanently provide fault protection to the 34.5  
2 kV line that serves the Maple Corner substation, and at the same time it will allow the East  
3 Montpelier substation to be de-energized and reconstructed in a much shorter time frame. WEC  
4 will also be able to use their standard substation design, further reducing the costs that installing  
5 the recloser inside the substation would generate.

6  
7 **Q.8. Will system stability and reliability be adversely affected by taking the East**  
8 **Montpelier Substation off line during construction?**

9 A.8. No, system stability and reliability will not be adversely affected. Based upon the circuit  
10 connections described in Q/A.6., WEC's members will continue to receive power. Voltage at the  
11 ends of the circuit will be adequate based upon modeling performed.. In the long term, the  
12 Maple Corner and Jackson Corners Substations have a combined ability to absorb the load  
13 currently served by the East Montpelier Substation. The completed rebuilt substation will  
14 significantly enhance system efficiency and reliability for WEC's members. However, there will  
15 be some minimal adverse effect on reliability while the substation is being reconstructed due to  
16 the additional length of line on the circuits picking up the load. The degree of adverse effect gets  
17 much worse if construction of the substation is delayed or carried out into the seasonal transition  
18 months of November and December when severe weather events are likely.

19 With respect to the transmission line to Maple Corner, the proposed line relocation and  
20 recloser addition will allow the line to continue to serve the Maple Corner substation reliably,  
21 throughout the construction of the new substation and into the future.

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2 **Q.9. What size transformers will be installed at East Montpelier Substation?**

3 A.9. The existing substation includes 4-1667 kVA transformers. The 2008-2011 Work Plan  
4 anticipates that this size will be adequate for area load, anticipated growth, and to provide back-  
5 up for Maple Corners Substation through 2040. It was determined that 1667 kVA transformers  
6 would be installed at the new substation.

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9 **Q.10. Does this complete your testimony?**

10 A.10. Yes, it does.

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1 Daniel H. Crocket  
2 Daniel Crocket, P.E.  
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4 At Montpelier, Vermont, this 29<sup>th</sup> day of June, 2010, personally appeared Daniel Crocket,  
5 P.E., who acknowledged that the facts and matters contained herein are true to the best of his  
6 knowledge, information and belief, and that he executed the foregoing document as his free act  
7 and deed,  
8

9 Before me,

10 Urborough Brown  
11 Notary Public  
12 My Commission Expires: 2/10/11  
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Notary Public

My Commission Expires: